

Claims

- [c1] 1. An active matrix substrate comprising:
a source electrode and a drain electrode which are provided on an insulating substrate and spaced apart from each other;
a semiconductor layer deposited on said source electrode and said drain electrode;
a gate insulating film deposited on said semiconductor layer;
a gate electrode deposited on said gate insulating film; and
a transparent conductive layer having first and second portions, the first portion being deposited on said gate electrode so as to be substantially the same pattern as that of said gate electrode, and the second portion including a portion deposited on a part of either said source electrode or said drain electrode.
- [c2] 2. The active matrix substrate according to claim 1,
said active matrix substrate further comprising:
a data line connected to either said source electrode or said drain electrode, wherein another portion of said gate insulating film is deposited on said data line.
- [c3] 3. The active matrix substrate according to claim 1, wherein the second portion of said transparent conductive layer constitutes a pixel electrode so as to be connected to either said source electrode or said drain electrode.
- [c4] 4. An active matrix substrate comprising:
a gate electrode deposited on an insulating substrate;
a gate insulating film deposited on said gate electrode;
a semiconductor layer deposited on said gate insulating film;
a source electrode and a drain electrode which are deposited on said semiconductor layer; and
a transparent conductive layer including portions deposited on said source electrode and said drain electrode to take substantially the same patterns as those of said source and drain electrodes, said transparent conductive layer is

connected to either said source electrode or said drain electrode and constitutes a pixel electrode.

- [c5] 5.The active matrix substrate according to claim 4,
said active matrix substrate further comprising:
a gate line connected to said gate electrode,
wherein another portion of said gate insulating film is deposited on said gate line.
- [c6] 6.The active matrix substrate according to claim 4,
said active matrix substrate further comprising:
a data line connected to either said source electrode or said drain electrode,
wherein said transparent conductive layer is constituted to include a portion deposited on said data line in substantially the same pattern as that of said data line.
- [c7] 7.An active matrix substrate comprising:
a gate electrode deposited on an insulating substrate;
a gate insulating film deposited on said gate electrode;
a semiconductor layer deposited on said gate insulating film;
source and drain electrodes deposited on said semiconductor layer; and
an ITO film deposited on said source and drain electrodes to include a portion having substantially the same pattern as that of said source and drain electrodes.
- [c8] 8.A display device comprising:
a thin film transistor structure formed on an insulating substrate;
a pixel electrode formed to be connected to either a source electrode or a drain electrode of said thin film transistor structure;
a data line formed to be connected to either the source electrode or the drain electrode of said thin film transistor structure; and
a gate line formed to be connected to a gate electrode of said thin film transistor structure,
wherein an upper surface of an upper electrode among said source, drain and

gate electrodes of said thin film transistor structure is covered with an ITO film, and an upper surface of either said data line or said gate line is covered with a gate insulating film.

[c9] 9.The display device according to claim 8, further comprising:
a liquid crystal layer filled by the use of said insulating substrate,
wherein upper surfaces of said upper electrode, said data line and said gate line which contact with said liquid crystal layer are covered with either said ITO film or said gate insulating film.

[c10] 10.A method for manufacturing an active matrix substrate in which a source electrode, a drain electrode, a semiconductor layer, a gate insulating film and a gate electrode are sequentially deposited on an insulating substrate directly or indirectly, comprising the steps of:
patterning a gate metal deposited on said gate insulating film by the use of a resist mask;
patterning said gate insulating film and said semiconductor layer by using said patterned gate metal as a mask;
forming an ITO film and patterning the ITO film by using a resist mask; and
patterning said gate electrode by using said patterned ITO film as a mask.

[c11] 11.The method according to claim 10, wherein the step of patterning said ITO film includes a step of patterning said ITO film in consideration of a pattern of said gate electrode as well as forming a pattern of a pixel electrode.

[c12] 12.The display device according to claim 11, wherein the step of forming said ITO film is formed in the same step of forming an ITO film constituting said pixel electrode.

[c13] 13.The method according to claim 11, wherein the step of patterning said ITO film includes a step for patterning said ITO film in consideration of a pattern of a gate line connected to said gate electrode.

[c14] 14.A method of manufacturing an active matrix substrate comprising the steps of:

forming a pattern of a gate electrode on an insulating substrate;
sequentially depositing a gate insulating film and a semiconductor layer on said gate electrode and then forming a metal film;
depositing an ITO film in consideration of a pattern of said metal film to be patterned and in consideration of a pattern of a pixel electrode; and
patterning said metal film by using said ITO film as a mask thus forming a source electrode and a drain electrode.

[c15] 15.The method according to claim 14, further comprising the step of:
providing a protection film on said source and drain electrodes to interpose the ITO film therebetween, and patterning said semiconductor layer by using said protection film.

[c16] 16.The method according to claim 14, further comprising the step of:
forming a pattern of a data line by using said ITO film as a mask in the step of forming said source electrode and said drain electrode.

[c17] 17.The method according to claim 14, wherein the step of forming said metal film is for forming said metal film in the same pattern as that of the patterned gate insulating film.

[c18] 18.An active matrix substrate comprising a gate electrode, a gate insulating film, a semiconductor layer, a source electrode and a drain electrode, which are sequentially deposited on an insulating substrate, a transparent conductive layer deposited on the source and drain electrodes so that the transparent conductive layer includes a portion deposited to be substantially the same pattern as those of the source and drain electrodes, the transparent conductive layer being connected to either the source electrode or the drain electrode to form a pixel electrode, and a gate line on which the gate insulating film is deposited, the gate line being connected to the gate electrode.